

FIELD SAFETY AND OPERATIONS MANUAL

INTRODUCTION

The following manual provides a guide to:

1. Expedition priorities
2. Risks likely to be encountered in the areas visited.
3. Standard operating procedures
4. Emergency procedures
5. Emergency contacts

The manual is intended as a guide, it will be improved and expanded through experience and input from expeditioners, so it is to be regarded as an evolutionary document.

GOALS

The operational goals (as opposed to specific research, technical, education, or outreach goals) of Expedition Two are, in decreasing order of priority:

- 1. Safety**
- 2. Science (including other mission tasks)**
- 3. Comfort**

Expedition members are expected to use their own judgment when ranking any proposed activity against these criteria within the context of other members of the expedition. However, every person is ultimately responsible for their own safety and cannot and must not be compelled, or allow themselves to be compelled, to act in an unsafe manner.

Persistent violations of mission goals, especially safety, will be considered a breach of the Code of Conduct and dealt with accordingly. Expedition members will have to sign the Code, as well as the Insurance Waiver, and Medical Declaration Form to take part. They are expected, in the case of overseas participants, to arrange their own travel and medical insurance.

HARZARDS AND RISKS

Outback South Australia is a remote desert environment. In the event of accident it may take 72 hours before an injured person is able to arrive at a hospital. All actions must be considered against this background.

The largest hazards are those associated with vehicles, both directly and indirectly. Other hazards include exposure, dehydration, falls, animals, fire, flood, and hygiene. The hazard of expedition activities to the environment must also be considered. The risks posed by these hazards can be mitigated through appropriate conduct.

Vehicles

Although the area is remote, many of the main roads are well travelled by tourists, people working in the area, and large trucks, especially the major highways. Distances are long, and drivers should be changed where possible and rest stops taken every two hours to minimize excessive fatigue. Care should be taken on both the main roads and the tracks, especially when driving on dirt roads that can change the handling characteristics of the vehicles. Drivers should

be especially alert on bush tracks for other vehicles, as people often assume that they are the only users in remote areas.

On the rougher tracks drivers should be alert for the dangers of getting hung up on obstacles or bogged in holes or soft going. Traversing slippery slopes can increase the danger of a low speed roll over. Windows should be kept closed and limbs inside the vehicle when moving to reduce the chance of injury in such an event.

Driving off tracks is to be avoided as much as possible. Not only does it damage the environment, off road driving is more likely to result in the vehicle being bogged. Furthermore there is considerable risk of punctures from sticks and undergrowth.

The larger animals, kangaroos and emus, are unbelievably stupid and will often run out in front of a vehicle at the last second. They can cause considerable damage, and considerable care should be exercised when driving after dusk, which should be avoided if possible.

If your vehicle is immobilised, occupants should stay with it until either rendered mobile again or help arrives. It is far easier to find a vehicle in the bush than people.

Exposure

Winter maximum average temperatures are in the high teens, with mean minimums of about five degrees. Actual temperatures often exceed these limits; can reach the 30s or fall below zero at night. The sunlight is intense and the UV flux (thanks to the ozone hole sponsored by the northern hemisphere) high. Rain is rare.

Field workers should be prepared for these extremes. Long pants, long sleeved shirt, an appropriate hat, sunglasses, and sunscreen are essential. A jumper (a sweater in the US and Canada), warm jacket, and raincoat should also be carried at all times.

Dehydration

Dehydration is the most serious hazard should a person become lost or immobilized, and the risks would be increased by exposure or injury. People should ensure they are fully hydrated at all times and have ample water supply with them when in the field. On extended trips a minimum water budget would be 5L per person per day, on a 5-day trip at least (or 200 L reserve should be available. While working near a vehicle, 2L of water should be carried at all times, if working away from the vehicle, 4L should be carried. The best place to store water is within the body, people should ensure they start and finish the day fully hydrated and should monitor their urine colour. If coloured you are dehydrated and need to drink more water immediately.

Falls

People may be working on foot away from the vehicles in many areas, but especially in the rugged hills near Arkaroola. Slopes are steep and often unstable. Care should be taken when climbing, descending or traversing such slopes, to avoid falls, injury from falling rocks, or being impaled on the local vegetation. Away from the hills the plains can also cause injury to the unwary, with rabbit holes and pavements of loose rocks called gibbers.

Animals

Snakes and spiders pose the main risk in the region. Most of the snake species in the area are poisonous and some, the Eastern and Western Brown, Death Adder, and the Tiger snake, are deadly. In particular the Fierce Snake or Inland Taipan, is by far and away the most poisonous snake in the world. Fortunately over winter snakes are generally torpid, if seen they are to be avoided and not provoked or molested. Furthermore, stout shoes or boots, long pants and long sleeved shirts provide protection against accidental encounters. If bitten, appropriate first aid procedures for snakebite should be followed and immediate medical aid sought. Anti-venom for all Australian species is available.

The Red Back spider and Funnel Web spider are both known from the area. The bite of the Red Back is unpleasant, that of the Funnel Web often deadly unless treated. Unlike snakes they are active throughout the year. The rule for any spider, especially large ones, is to leave it alone. If bitten, similar procedures to snake bite should be followed. Anti-venom for Funnel Web spiders is available.

Large colonies of Bull Ants are very common throughout the area. The nests are recognisable as conspicuous piles of gravel and the ants themselves are brown-red in colour and about 1.5 cm in length. Their bite is painful but not normally dangerous unless in large numbers and for people with allergenic responses.

Flood

Rainfall is rare inland South Australia but can be intense. Creeks rise rapidly in flood and on no account should people camp or park vehicles in creek beds. If trapped by floodwaters it is better to wait until they subside (usually a few hours) than try and cross. If crossing a recently flooded creek bed in a vehicle, drivers must be aware of the risks of being bogged. Elevated areas may not be flooded but clay rich soils can be rendered impassable for a day or so after rain and movement on tracks can lead to excessive damage. It is better to wait under these circumstances than risk movement.

Fire

Wildfires are rare in desert South Australia and adjacent areas. Campfires are normally permitted, however expedition members must ensure that they use only dead timber and that the fire is out when they move on. The risk of fire spreading to camp facilities such as tents and sleeping bags through airborne embers. Flammable liquids, such as LPG, diesel or petrol, must be stored away from fire. Ensure the fire is out and buried before you leave camp. Local instructions from landowners and relevant authorities must be followed.

Hygiene

Avoid drinking from standing water without purification or boiling as it might be contaminated by animals. Dispose of body waste appropriately. While camping bowel motions should be disposed of well away from creeks and water holes by burial to a depth of at least 30 cm.

Alcohol and other drugs

All facilities, vehicles and accommodations used by Spaceward Bound Oz expeditions are smoke free areas at all times. Smoking is not permitted while wearing MarsSkin suits. It is tolerated on other occasions provided that it does not pose a fire risk and does not annoy others.

Excessive consumption of alcohol is a health, safety and conduct issue on many levels. It must be restricted at a moderate level after hours only. Under no circumstances is a person to consume alcohol less than 8 before driving an expedition vehicle or any vehicle containing expedition members. Violation of the rules of alcohol consumption and the use of expedition vehicles will result in immediate suspension from the expedition under the conditions of the code of conduct.

Use of illegal drugs and misuse of medications will be cause of immediate suspension from the expedition under the conditions of the code of conduct.

STANDARD OPERATION PROCEDURES

Personal equipment

People should always be dressed in appropriate clothing – stout shoes or boots, long sleeved pants and shirt, sun hat, sun screen and glasses. They should also be prepared for changes in weather or an unexpected overnight stay and therefore carry a jumper (sweater for North Americans), jacket, and raincoat.

Emergency equipment that should be kept on or near the person at all times in the field should include: compass (and/or GPS), matches, small first aid kit, water bottle of at least 2 L capacity, knife.

Plan for what might go wrong and how you would cope, rather than assume that everything will go according to plan.

Personal medications are your responsibility.

Working on Foot

- Plan where you are going, when you will leave, and when you will get back.
- Ensure that others are aware in written form, via a situation board or note, of the plan when you leave.
- Make sure you have adequate personal equipment and water.
- Avoid deviating from the plan. Remember you will want to be found quickly if some goes wrong
- Never work alone.
- Always be aware of where you are in relation to other people, your base, your transport, and your goals. Also be aware of the passage of time.
- Allow a time margin for when you get back.
- Ensure that people know you are back – sign off on the situation board or note.

Base team vehicle activities

- Plan where you are going, when you will leave, and when you will get back.
- Ensure that others at base are aware in written form, via a situation board or note, of the plan when you leave.

- Ensure you have adequate clothing, recovery gear, and water
- Avoid deviating from the plan. Remember you will want to be found quickly if some goes wrong. If you must deviate, inform base by radio. Ensure that the change is documented.
- Never work alone.
- Always be aware of where you are in relation to other people, your base, your transport, and your goals. Also be aware of the passage of time.
- Allow a time margin for when you get back.
- In an emergency contact base by radio if possible. If immobilised, remain with your vehicle.
- Ensure that people know you are back – sign off on the situation board or note.

Away team vehicle activities

- Plan where you are going, when you will leave, and when you will get back.
- Ensure that others at base are aware in written form, via a situation board or note, of the plan when you leave base.
- Ensure that plans are updated on a daily basis.
- Always travel in pairs, whether on foot or in vehicles.
- Ensure you have adequate clothing, recovery gear, tools, communications, first aid supplies, other equipment, water, and food.
- Avoid deviating from the plan. Remember you will want to be found quickly if some goes wrong. If you must deviate, inform base by radio. Ensure that the change is documented.
- Keep to twice daily radio or satellite phone contacts, one in the morning before setting out, and one in the evening after the completion of fieldwork. If one channel does not work, try the other. Remember if you miss two contacts, people will come looking for you.
- Allow a time margin for when you get back at the end of each day.
- Ensure that people know you are back – sign off on the situation board or note.

Base camp

- Ensure that the base is kept clean, tidy and up to date on all requirements.
- Keep the situation board current for both day excursions and the away team
- If the day excursion is not back by the appropriate time institute emergency procedures (see below).
- Keep to scheduled radio or telephone contacts with the away team.
- If the away team, misses a scheduled morning and afternoon contact institute emergency procedures (see below).
- Remember that people away in the field are relying on you.

Vehicle convoys

Base camp

- Travel as a group
- Obey all road rules
- Ensure safe distances between vehicles are maintained that are appropriate to the conditions (which may include dust, mud, wet roads, and rain)

- Keep regular breaks at 2 hour
- Drivers, keep track of people in your vehicles and ensure nobody gets left behind. .
- Passengers, do not swap vehicles without informing your drivers.

Environmental protection

Many of the areas in which Spaceward Bound activities take place are private nature reserves, and state or national parks. Permission has been granted to work in these areas provided that disturbance is minimal and no endangered species of animal or plant are disturbed. The remaining areas are pastoral or mining leases, or military reservations. Once again, permission to work on these areas has been granted and complete care should be taken to avoid environmental damage.

Failure to maintain basic environmental protection standards is likely to lead to withdrawal of permission for future activities. The following rules should be kept.

- Avoid litter.
- Flammable rubbish (paper, light plastic, food scraps) should be completely incinerated while in the field. Tins (cans) and bottles should be burnt to remove food and drink residues.
- Larger items (e.g. heavier plastics, burnt tins, unserviceable equipment, batteries) should be removed to Arkaroola for disposal.
- Toxic items (chemicals, oils, batteries etc.) must be removed.
- Avoid damage to trees and other vegetation.
- Do not disturb stock or wildlife. Camp away from waterholes and other water sources.

Aboriginal heritage

Australia has been inhabited for at least 50,000 years and the areas visited have been home to generations of aboriginal people. Work in areas under native title such as national parks and reserves will need clearance for the appropriate aboriginal and heritage authority and areas outside the parks and reserves are subject to protection under various heritage acts. Do not disturb any artifacts, petroglyphs, stone arrangements, hearths, or middens that may be found. Avoid camping in such areas. Should you encounter any burial sites do not disturb in any way and inform both the property manager and the relevant authorities as soon as possible.

Bush courtesy

We are reliant on the good will of the land owners on whose property we are working. These people are dependent on this land for their livelihood and take a keen interest in all that goes on. They are also extremely knowledgeable and are more than willing to help and must be treated with the respect they deserve. Some simple rules that should be followed:

- When working on a property ring the homestead a few days in advance to let them know where you are going and when.
- When you start work in an area visit the homestead, company office, park centre, or military HQ first. They can give invaluable information on the state of tracks, gates, and water sources. You will also be advised of worthwhile camping spots and areas to avoid because of pest control, stock movements, military activities, etc.

- While working on site avoid mess, litter, uncontrolled fires, damage to infrastructure, disturbances to stock, leave gates open if open, closed if closed. You (not MSA) will be liable for any damage!
- Follow all instructions from property owners immediately.
- When you leave, call in at the homestead, company office, park centre, or military HQ to inform them of your departure and thank them.
- Parts of the Woomera area are an active military range. Do not enter without permission from the authorities and follow all instructions to the letter for your own and other's safety.

Communications

UHF radios will be used for communications between vehicles. UHF repeaters generally have a range of at least 60 to 100 km at ground level, dependant on the height of the repeater. There are a number of UHF repeaters in the area that can be used in the Arkaroola area to facilitate communications in rugged terrain.

- Arkaroola channel 8 repeater is good most of the way to Lake Frome, but is masked at the base of the range.
- Wertaloona channel 16 covers Wooltana and Balcanoona.
- Blinman channel 3 covers most of Wertaloona and the south western parts of Frome Downs.
- Curnamona channel 6 covers the southern parts of Frome Downs.
- Murnpeowie channel 3 covers Murnpeowie and parts of Mount Freeling and north western Moolawotana.
- Channel 30 is used by Heathgate Resources at Beverley and could be used to get messages to Arkaroola from western, central Woolatana.

EMERGENCY PROCEDURES

Medical facilities

Every person has the responsibility of bringing their own personal first aid kit and medications. There will be a standard first aid kit in each Expedition vehicle and at the field base. A medical emergency is defined as something that exceeds the ability of local resources to render the required treatment.

There are small medical centres at Leigh Creek, Woomera, and Coober Pedy. Serious emergencies can be evacuated by the Royal Flying Doctor Service (RFDS) to an appropriate hospital from the all weather airfields at Balcanoona, Leigh Creek, Woomera, and Coober Pedy.

Emergency at base camp

- Assess situation
- Inform Expedition leaders (expedition leaders to inform property managers)
- If medical emergency inform RFDS and follow instructions.
- If emergency involves vehicle accident with casualties or criminal activity contact police.

Emergency on day trip

- Assess situation
- Inform Expedition leaders (expedition leaders to inform property managers)
- If team is missing check last known position. Prepare a search to leave next morning.

- If still missing following morning, send out the search team, holding all other activities in abeyance until the situation is resolved.
- If medical emergency inform RFDS and follow instructions.
- If emergency involves vehicle accident with casualties or criminal activity contact police.
- If missing party is not located by the end of the following day contact police (or sooner if advised by local land owners).

Emergency on away team

- Assess situation
- Inform Expedition leaders (expedition leaders to inform property managers)
- Prepare a search to leave next morning to the away team's last known position.
- If the following morning's contact is also missed, send out the search team, holding all other activities in abeyance until the situation is resolved.
- If medical emergency inform RFDS and follow instructions.
- If emergency involves vehicle accident with casualties or criminal activity contact police.
- If missing party is not located by the end of the following day contact police (or sooner if advised by Arkaroola management and/or local landholders).

Emergency in convoy

- Assess situation
- Inform Expedition leaders
- If medical emergency inform nearest hospital or RFDS and follow instructions.
- If emergency involves vehicle accident with casualties or criminal activity contact police.

EMERGENCY CONTACT NUMBERS

The area code for South Australia is 08. There is no need to use this prefix if dialing within the state. Do not dial the 0 if dialling from overseas. The Australian country code is 61.

Woomera ADF

Woomera Police

Woomera Community Hospital

08-8673 7788

Coober Pedy Hospital

08-8672 5009

Arkaroola Office

08-86484848

Murnpeowie Homestead

08-86484824

Mt. Lyndhurst Homestead

08-86757796

Mt Freeling Homestead

08-86484851

Moolawatana Homestead

**Spaceward Bound Australia
SBA 2009**



08-86484825

Frome Downs Homestead

08-86484823

Umberatana homestead

08-86484820

Wooltana Station

08-86484822

Heathgate Resources Beverley Uranium Mine

08-86484650

National Parks

Gammon Ranges 08-8648 4829

Desert Parks 08-8648 4244

Police (Leigh Creek)

08-86752 004

State Emergency Service

08-86752 004

Royal Flying Doctor Service

Port Augusta 08-8642 2044

Broken Hill 08-8088 0777

Leigh Creek Hospital

Hospital 08-86752 022

Doctor 08-86752 018

Epic Energy

Pipeline emergency free call number 1800625865

Other emergency numbers

The standard emergency telephone number in Australia is 000.